
GALLARDO & ASSOCIATES, INC.

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Environmental and Geological Services

We solve the problem!

March 1, 2006

Ms. Minnie Corbit
4675 Dywalt Road
Sebastopol, CA 95472
(707) 823-4574

Job No. 016A.98

**Subject: 2005 FOURTH QUARTER GROUNDWATER SAMPLING RESULTS FOR
THREE DEEP GROUNDWATER MONITORING WELLS LOCATED AT:
3880 Gravenstein Highway, Sebastopol, California**

Dear Ms. Corbit:

Gallardo & Associates, Inc. is pleased to submit the following Groundwater Monitoring Report for the following location: **3880 Gravenstein Highway, Sebastopol, California.**

Water samples were collected from three deep groundwater monitoring wells on **November 11, 2006** and analyzed for the following petroleum constituents: Total Lead, 1,2-DCA, 1,2-DBA, total petroleum hydrocarbons as gasoline (TPH-g), the fuel constituents benzene, toluene, ethylbenzene, and xylenes (BTEX), and the fuel oxygenates Di-isopropyl Ether (DIPE), Ethyl tert-Butyl Ether (ETBE), Methyl tert-Butyl Ether (MTBE), tert- Amyl Methyl Ether (TAME), and tert-Butanol (TA). The groundwater laboratory results for wells DW-1 through DW-3 are presented within the attached report. The next quarterly sampling is scheduled for February 2006.

Gallardo & Associates, Inc. understands that you will forward a copy of this report to the Sonoma County Department of Health Services Environmental Health Division (**SCDHSEHD**) for their review. Please call me, if you have any questions at (707) 537-2292.

Respectfully,

Gallardo & Associates, Inc.

Rafael Gallardo
President/Professional Geologist

GALLARDO & ASSOCIATES, INC.

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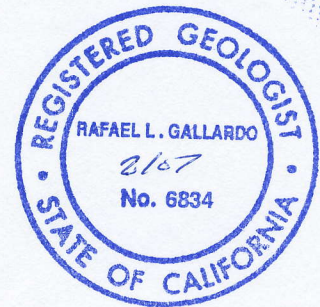
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**2005 FOURTH QUARTER DEEP GROUNDWATER MONITORING REPORT
for
3880 GRAVENSTEIN HIGHWAY
SEBASTOPOL, CALIFORNIA**

**PREPARED FOR:
Ms. Minnie Corbit, Owner
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Sebastopol, California 95472**

**SUBMITTED TO:
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**PREPARED BY:
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GALLARDO & ASSOCIATES, INC. PROJECT NO. 016A.98

March 1, 2006

	Page
1.0 INTRODUCTION	1
1.1 Site Location and Description	1
1.2 Previous Work and Site Conditions	1
1.3 Site Conceptual Model	9
1.3.1 Soil Model	9
1.3.2 Groundwater Model	9
2.0 GROUNDWATER SAMPLING	11
2.1 Groundwater Elevation Measurements	11
2.2 Monitoring Well Sampling	14
3.0 ANALYTICAL RESULTS	14
3.1 Monitoring Well Sampling Analytical Results	14
4.0 CONCLUSIONS	16
5.0 RECOMMENDATIONS	16
6.0 SCHEDULE OF ACTIVITIES FOR NEXT QUARTER	16
7.0 REPORT DISTRIBUTION	16
8.0 LIMITATIONS	16
9.0 REFERENCES	17
9.1 Geological References	18
 APPENDIX A	 Purge Data (November 11, 2005).
APPENDIX B	Analytical Data Sheets and Chain-of-Custody Records for Monitoring Well Sampling (November 11, 2005).

LIST OF TABLES

TABLE 1	Groundwater Elevation Data	12
TABLE 2	Historical and Current Groundwater Analytical Results	15

LIST OF FIGURES

FIGURE 1	Site Location Map	2
FIGURE 2	Monitoring Well Location Map	3
FIGURE 3	Groundwater Gradient Map (November 11, 2005)	13

1.0 INTRODUCTION

1.1 Site Location and Description

The site is located at 3880 Gravenstein Highway in Sebastopol, California (See **Figure 1**). The property is bordered by Gravenstein Highway to the north, Hessel Road to the west, a commercial property to the east, and other properties to the south. The site property is owned by Ms. Minnie Corbit who is currently leasing the building to a restaurant and bar equipment company called Dolce Neve. The site area is approximately 1 ½ acres in size, slopes gently to the southwest and is covered by gravel, natural ground, and concrete. The regional topography consists of rolling hills and farm land (See **Figure 2**).

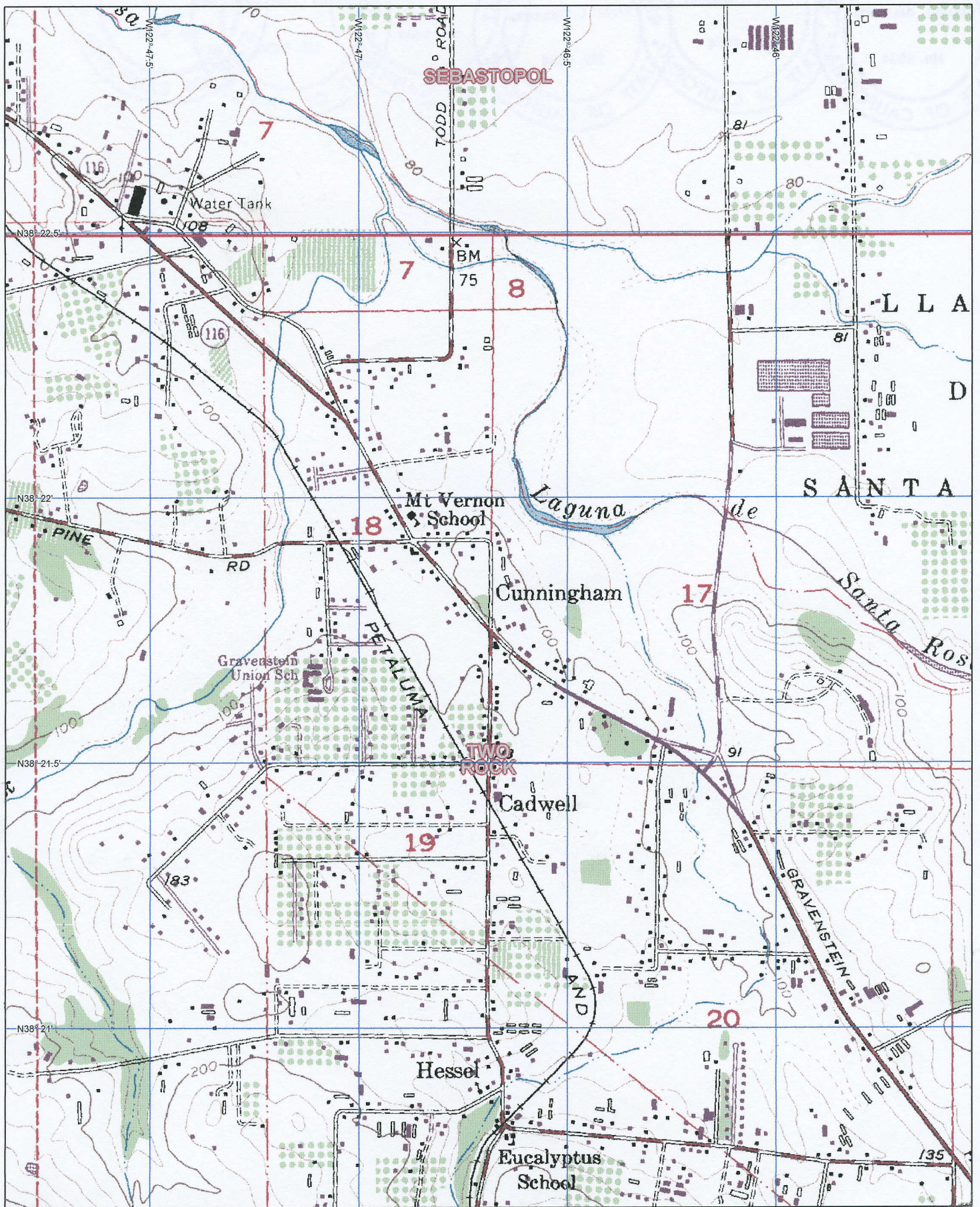
1.2 Previous Work and Site Condition

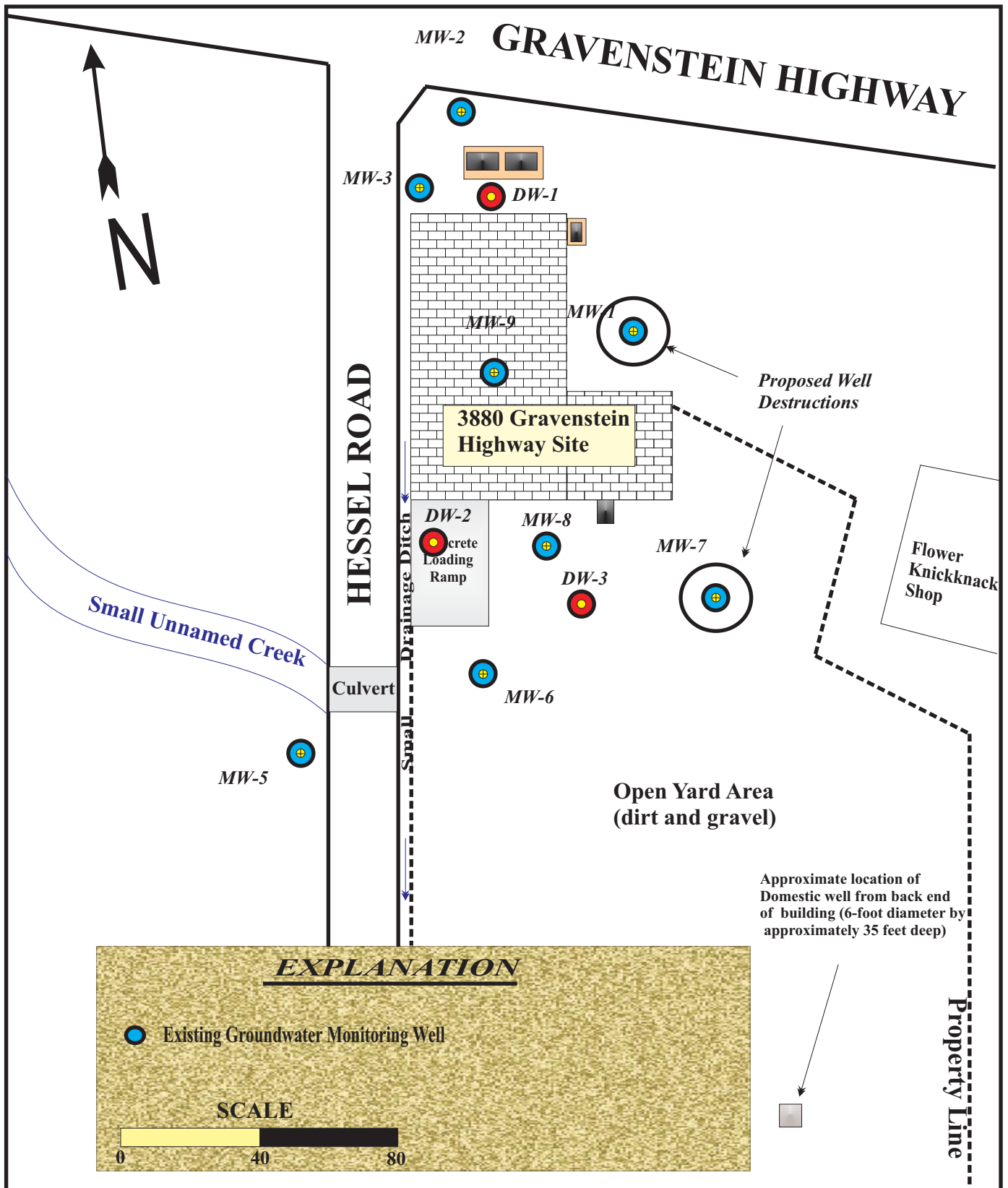
The project site was formally a garage and auto dismantling yard call *Corbit's Garage and Wrecking*

In 1993, PES was retained by Ms. Corbit to perform a soil and groundwater investigation at the site. Ms. Corbit informed PES that a third UST might be buried adjacent to the northeast corner of the building. However, a search for the third UST was not performed during the investigation.

On August 27, 1993, the Sonoma County Department of Health Services Environmental Health Division (SCDHSEHD) received a report entitled *Soil and Groundwater Investigation 3880 Gravenstein Highway South Sebastopol, California (PES, August 25, 1993)*. The investigation included the drilling of five soil borings to depths between 25 and 35 feet below grade surface (bgs). Three of the soil borings were converted into two-inch diameter groundwater monitoring wells of various depths (MW-1 to 35 feet bgs, MW-2 to 25 feet bgs, and MW-3 to 25 feet bgs). In their report, PES presented soil results from their investigation revealing concentrations of total petroleum hydrocarbons as TPH-g ranging between < 1 part per million (ppm) to 80 ppm, and the fuel constituent Benzene ranging between < 0.005 ppm to 0.35 ppm. Tables presenting groundwater sampling results revealed TPH-g concentrations ranging between 50 parts per billion (ppb) to 2,400 ppb, and Benzene concentrations ranging between < 0.5 ppb to 140 ppb in the groundwater samples beneath the site. PES recommended the removal of hydrocarbon-affected soil from the site, and an additional investigation to evaluate the lateral extent of the impacted groundwater beneath the property.

On January 30, 1998, *Gallardo & Associates* was retained by Ms. Corbit to perform one round of groundwater sampling of the three groundwater monitoring wells at the site. In January 1998, *Gallardo & Associates* submitted a report entitled 1998 *First Quarterly Groundwater Monitoring Report*. *Gallardo & Associates* concluded that one of the three existing monitoring wells (MW-3) revealed an increasing trend in TPH-g and Benzene concentrations and a decreasing trend in TPH-g and Benzene concentrations in wells MW-1 and MW-2. *Gallardo & Associates* recommended continued monitoring of the three monitoring wells to evaluate trends in the direction of groundwater flow beneath the site, additional borings and groundwater monitoring wells to determine the lateral and vertical extent of the soil and groundwater plumes beneath the property, and a Sensitive Receptor Survey (SRS) to evaluate risks of the impacted groundwater on human health and the environment in the area of the site.





GALLARDO & ASSOCIATES, INC.
 Environmental and Geological Services

SITE MAP
 Project No. 016.98

FIGURE

2

On April 15, 1998, *Gallardo & Associates* submitted a workplan to Sonoma County Environmental Health Division (SCEHD). The workplan was approved by Ms. Elenor Raltiff in a letter dated May 1, 1998.

On June 26, 1998, *Gallardo & Associates* collected groundwater samples from the three existing monitoring wells. *Gallardo & Associates* concluded that the analytical results indicated increasing concentrations of benzene and tert-butanol in monitoring well MW-3, while monitoring well MW-1 revealed concentrations below the laboratory reporting limits (non-detectable/ND) for TPH-g, BTEX, and the Fuel Oxygenates. *Gallardo & Associates* recommended continued monitoring of the three monitoring wells to evaluate trends in the direction of groundwater flow beneath the site, additional borings and groundwater monitoring wells to determine the lateral and vertical extent of the soil and groundwater plumes beneath the property, and a Sensitive Receptor Survey (SRS) to evaluate risks of the impacted groundwater on human health and the environment in the area of the site. *Gallardo & Associates* submitted a report entitled *1998 Second Quarter Groundwater Sampling Results for Three Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California, dated August 30, 1998*.

On October 19 and 20, 1998, *Gallardo & Associates* advanced four exploratory soil borings to an approximate depth of between 15 and 21 feet below grade surface (bgs). The borings were converted into two-inch diameter groundwater monitoring wells (MW-4, MW-5, MW-6, and MW-7). Based on the data collected during the investigation, *Gallardo & Associates* concluded that during the investigation no evidence of petroleum hydrocarbons was detected in the soil samples collected from the four exploratory soil borings/monitoring wells. Based on this information, it appeared that the horizontal and vertical extent of the petroleum impacted soil beneath the site property had been defined; however, the groundwater had been impacted beneath well MW-6 by petroleum fuel hydrocarbons in the form of 1,2-DCA at 2.2 ppb. Additional wells may be required south and east of MW-6 in order to evaluate the chlorinated solvents detected in the groundwater. Because petroleum fuel hydrocarbons were detected in the groundwater, additional groundwater sampling events would be needed at the site. *Gallardo & Associates* recommended that Groundwater monitoring wells MW-4, MW-5, MW-6, and MW-7 should be purged and sampled along with the three existing wells during the next scheduled groundwater sampling event. All of the existing groundwater monitoring wells should be sounded and the groundwater levels measured monthly during each quarter. The direction of groundwater flow and the hydraulic gradient should be calculated and evaluated on a monthly basis to evaluate seasonal fluctuations in groundwater depths and flow directions. The drilling and installation of additional monitoring wells for the purpose of evaluating the vertical and horizontal extent of the impacted groundwater south and west of well MW-6 would be needed, however, an additional episode of groundwater monitoring should be conducted prior to the installation of these wells. *Gallardo & Associates, Inc.* submitted a report entitled *Monitoring Well Installation Report at 3880 Gravenstein Highway in Sebastopol, California, dated January 19, 1999*.

On October 28, 1998, *Gallardo & Associates* collected groundwater samples from seven monitoring wells. *Gallardo & Associates* concluded that well MW-3 revealed an increase in TPH-g, TEX, and Tert-Butanol concentrations. 1,2 DCA was also detected in both MW-2 at 2.2 ppb and MW-3 at 9.3 ppb. A groundwater depression was detected beneath the site property revealing groundwater flows in three directions (southeast, northeast, and southwest). *Gallardo & Associates* recommended continued monitoring of the seven monitoring wells to evaluate trends in the direction of groundwater flow beneath the site. Additional borings and groundwater monitoring

wells to determine the lateral and vertical extent of the soil and groundwater plumes beneath the property, and a Sensitive Receptor Survey (SRS) were also recommended. *Gallardo & Associates* submitted a report entitled *1998 Fourth Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California, dated January 5, 1999*.

On June 23, 1999, *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that wells MW-1 through MW-7 revealed a decreasing trend for analites tested that quarter; however, well MW-3 revealed a slight increase in benzene and well MW-5 revealed a trace of TBA at 30 ppb. The groundwater depression observed in the October 1998 monitoring report revealed a southeast directional flow, (nose facing northwest) whereas the June 1999 depression revealed an east directional flow (nose facing east). *Gallardo & Associates, Inc.* recommended continued monitoring of the seven monitoring wells to evaluate trends in the direction of groundwater flow beneath the site and performing a Sensitive Receptor Survey (SRS). *Gallardo & Associates, Inc.* submitted a report entitled *1999 Second Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California, dated July 30, 1999*.

On June 28, 2000, *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that Comparisons of past and current analytical results for wells MW-1 through MW-7 indicated a decreasing trend in petroleum fuel hydrocarbons; however, well MW-3 revealed a slight increase in TPH-g and a slight decrease in benzene. Well MW-6 revealed a trace of 1,2 DCA at 1.3 ppb. In addition, well MW-3 revealed an increase in TBA at 140 ppb. The groundwater depression observed in both the October 1998 and June 1999 monitoring reports revealed a southeast directional flow, (nose facing northwest) and an east directional flow (nose facing east), respectively. However, the June 2000 groundwater flow direction revealed a southwest directional flow. *Gallardo & Associates, Inc.* recommended continued monitoring of the seven monitoring wells to evaluate trends in the direction of groundwater flow beneath the site and performing a Sensitive Receptor Survey (SRS). *Gallardo & Associates, Inc.* submitted a report entitled *2000 Second Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California, dated October 20, 2000*.

On September 20, 2000 *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that comparisons of past and current analytical results for wells MW-1 through MW-7 indicated a decreasing trend in petroleum fuel hydrocarbons; however, well MW-3 revealed an increase of 1,2 DCA at 14 ppb, while well MW-6 revealed a slight decrease of 1,2 DCA at 1.2 ppb. Groundwater flow for the period was to the southwest with the nose of the depression trending northeast *Gallardo & Associates, Inc.* recommended the following: additional episodes of quarterly groundwater sampling of the seven monitoring wells to evaluate trends in gasoline hydrocarbon concentrations in the groundwater beneath the site; completion of the Sensitive Receptor Survey (SRS); drilling of additional groundwater monitoring wells adjacent to the concrete building pad and building, and one between the existing domestic well and MW-6, and one within the building; and sampling of the domestic well, if possible. *Gallardo & Associates, Inc.* submitted a report entitled *2000 Third Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California, dated October 28, 2000*.

On December 7, 2000, *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that comparisons of past and current analytical results for wells MW-1 through MW-7 revealed no change in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter; however, wells MW-2 and MW-3 revealed increasing concentrations of TBA, TPH-g, and BTEX. TBA was detected for the first time in well MW-2. The groundwater depression observed during the period matched the October 1998 sampling event, both revealed a southeast directional flow, (nose facing northwest). *Gallardo & Associates, Inc.* recommended the following: additional episodes of quarterly groundwater sampling of the seven monitoring wells to evaluate trends in gasoline hydrocarbon concentrations in the groundwater beneath the site; completion of the Sensitive Receptor Survey (SRS); drilling of additional groundwater monitoring wells adjacent to the concrete building pad and building, and one between the existing domestic well and MW-6, and one within the building; and sampling of the domestic well, if possible. *Gallardo & Associates, Inc.* submitted a report entitled *2000 Fourth Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated March 20, 2001.

On March 27, 2001, *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that comparisons of past and current analytical results for wells MW-1 through MW-7 revealed no change in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter; however, well MW-2 revealed a slight increase in toluene at 0.80 ppb, and well MW-3 revealed an increase in benzene at 30 ppb. The groundwater for the March sampling event revealed a south-southwest general flow direction. *Gallardo & Associates, Inc.* recommended the following: additional episodes of quarterly groundwater sampling of the seven monitoring wells to evaluate trends in gasoline hydrocarbon concentrations in the groundwater beneath the site; completion of the Sensitive Receptor Survey (SRS); drilling of additional groundwater monitoring wells adjacent to the concrete building pad and building, and one between the existing domestic well and MW-6, and one within the building; and sampling of the domestic well, if possible. *Gallardo & Associates, Inc.* submitted a report entitled *2001 First Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated May 28, 2001.

On June 7, 2001, *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that comparisons of past and current analytical results for wells MW-1 through MW-7 revealed no change in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter; however, well MW-2 revealed a slight increase in benzene at 5.6 ppb, and well MW-3 revealed an increase in TPH-g at 4,000, benzene at 210 ppb, and TEX. The groundwater flow for the period revealed a south-southwest general flow direction. *Gallardo & Associates, Inc.* recommended the following: additional episodes of quarterly groundwater sampling of the seven monitoring wells to evaluate trends in gasoline hydrocarbon concentrations in the groundwater beneath the site; completion of the Sensitive Receptor Survey (SRS); drilling of additional groundwater monitoring wells adjacent to the concrete building pad and building, and one between the existing domestic well and MW-6, and one within the building; and sampling of the domestic well, if possible. *Gallardo & Associates, Inc.* submitted a report entitled *2001 Second Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated May 28, 2001.

On September 14, 2001, *Gallardo & Associates, Inc.* collected groundwater samples from seven

monitoring wells. *Gallardo & Associates, Inc.* concluded that comparisons of past and current analytical results for wells MW-1 through MW-7 revealed a change in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter in the following wells: MW-2 revealed an increase in TPH-g and Benzene, while MW-3 revealed a dramatic decrease in TPH-g concentrations (from 4,000 ppb down to 650 ppb) and a decrease in benzene concentrations (from 210 ppb down to 150 ppb). The groundwater for the third quarter period revealed a southwest general flow direction. *Gallardo & Associates, Inc.* recommended additional episodes of quarterly groundwater sampling of the seven monitoring wells, additional groundwater monitoring wells (one adjacent to the concrete building pad and building, one between the existing domestic well and MW-6, and one within the building), and sampling of the domestic well, if possible. *Gallardo & Associates, Inc.* submitted a report entitled *2001 Third Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated September 17, 2001.

On November 19, 2001, *Gallardo & Associates, Inc.* collected groundwater samples from seven monitoring wells. *Gallardo & Associates, Inc.* concluded that the past and current analytical results for wells MW-1, MW-4, MW-5, MW-6 and MW-7 revealed a change in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter in the following wells: MW-2 revealed a decrease in TPH-g and Benzene, while MW-3 revealed an increase in TPH-g concentrations (from 650 ppb up to 8,800 ppb), benzene concentrations (from 150 ppb up to 170 ppb), and TBA concentrations from ND up to 62 ppb. The groundwater reversed direction from a southwest flow to a southeast general flow direction. It was thought that impacted soil remained beneath the site property adjacent to well MW-3. Delineation and removal of the impacted soil was proposed in order to reduce the impact to the groundwater. *Gallardo & Associates, Inc.* recommended additional episodes of quarterly groundwater sampling of the seven monitoring wells and the installation of additional groundwater monitoring wells: one adjacent to the concrete building pad and building, one between the existing domestic well and MW-6, and one within the building, downgradient of well MW-3. Also, additional exploratory soil borings to evaluate the extent of the underlying impacted soil beneath and around well MW-3. And finally, sampling of the domestic well, if possible. *Gallardo & Associates, Inc.* submitted a report entitled *2001 Fourth Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated November 29, 2001.

On March 13, 2002, *Gallardo & Associates, Inc.* collected groundwater samples from nine monitoring wells. *Gallardo & Associates, Inc.* concluded that the current analytical results for wells MW-1, through MW-9 revealed no significant changes in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter with the exception of well MW-3, which revealed a dramatic decrease in the TPH-g and Benzene concentrations within the monitoring well. However, there was an increase in the concentration amount of TBA. This was likely due to the recent change in the screening interval for MW-3. *Gallardo & Associates, Inc.* recommended additional episodes of quarterly groundwater sampling of the nine monitoring wells. *Gallardo & Associates, Inc.* submitted a report entitled *2002 First Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated April 30, 2002.

On June 5, 2002, *Gallardo & Associates, Inc.* collected groundwater samples from nine monitoring wells. *Gallardo & Associates, Inc.* concluded that the analytical results for wells MW-1 through

MW-9 revealed no significant changes in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter with the exception of well MW-3, which continued to reveal decreasing concentrations of TBA, TPH-g and Benzene. Groundwater flow was to the west-southwest with an average hydraulic gradient of approximately 0.02 ft/ft. *Gallardo & Associates, Inc.* recommended additional episodes of quarterly groundwater sampling of the nine monitoring wells. *Gallardo & Associates, Inc.* submitted a report entitled *2002 Second Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated June 20, 2002.

On November 22, 2002, *Gallardo & Associates, Inc.* collected groundwater samples from nine monitoring wells. *Gallardo & Associates, Inc.* concluded that the analytical results for wells MW-1 through MW-9 revealed no significant changes in the concentration amounts of petroleum fuel hydrocarbons in the groundwater for the quarter with the exception of well MW-3, which continued to reveal decreasing concentrations of TBA, TPH-g, and Benzene concentrations. Groundwater flow was again to the west-southwest with an average hydraulic gradient of approximately 0.08 ft/ft. *Gallardo & Associates, Inc.* recommended additional episodes of quarterly groundwater sampling of the nine monitoring wells. *Gallardo & Associates, Inc.* submitted a report entitled *2002 Third Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated September 15, 2002.

Gallardo & Associates, Inc. submitted a report entitled *2002 Fourth Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated January 30, 2003.

Gallardo & Associates, Inc. submitted a report entitled *2003 First Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated March 5, 2003.

Gallardo & Associates, Inc. submitted a report entitled *2003 Second Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated July 2, 2003.

Gallardo & Associates, Inc. submitted a report entitled *2003 Third Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated September 5, 2003.

Gallardo & Associates, Inc. submitted a report entitled *2003 Fourth Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated January 25, 2004.

Gallardo & Associates, Inc. submitted a report entitled *2004 First Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated February 15, 2004.

Gallardo & Associates, Inc. submitted a report entitled *2004 Second Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California*, dated June 19, 2004.

Gallardo & Associates, Inc. submitted a report entitled **2004 Third Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California**, dated September 20, 2004.

Gallardo & Associates, Inc. submitted a report entitled **2004 Fourth Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California**, dated November 6, 2004.

Gallardo & Associates, Inc. submitted a report entitled **2005 First Quarter Groundwater Sampling Results for Seven Groundwater Monitoring Wells at 3880 Gravenstein Highway in Sebastopol, California**, dated May 15, 2005.

In June 2005, *Gallardo & Associates, Inc.* advanced three deep exploratory soil borings to an approximate depth of between 45 and 51 ½ feet below grade surface (bgs). The three borings were converted into two-inch diameter, 45-foot deep groundwater monitoring wells. *Based on the data collected during this investigation, Gallardo & Associates, Inc. concluded the following: an impacted soil zone was detected beneath exploratory soil boring/groundwater monitoring well DW-1 between a depth of one to 13 feet bgs. The impacted soil was detected near the former UST tank cavity located in front of the existing building. It appeared that both the vertical and lateral extent of the impacted soil had been defined and was located between wells MW-2 and MW-3, up to the end of the northeast corner of the building. It was noted that if this area was to be excavated, it would likely remediate the soil plume. The perched water table had been defined once again and was determined to be flowing through the site from an upgradient direction located northeast of the site and flows through the building in a southern direction. However, it appeared to be seasonal and did not appear to pose a threat to the area during the summer and fall seasons. However, during the winter and spring, it appeared to flow through the impacted shallow soil area located at the front of the building. The perched zone detected during the investigation ranged in thickness from approximately one to two feet. The vertical extent of the groundwater plume may not have been detected during the investigation and appeared to extend beyond a depth of 51 feet bgs. The impact extended into the bedrock which consisted of a highly weathered and fractured Sandstone. However, the lateral extent of the lower water zone impact appeared to be confined to the area around well DW-1. The lower water zone appeared to be under a semi-confined state and may not be completely confined and could be in contact with the upper water table zone. Further evaluation of this premise was recommended. Gallardo & Associates, Inc. recommended the excavation of the shallow and deeper impacted soil from the area between wells MW-2 and MW-3, and along the front up to the northeast corner of the August 18 existing building. Excavation of the impacted soil located along the front of the building was suggested to be limited to a depth of approximately nine feet bgs, (former UST cavity). Removal of monitoring well MW-3 was suggested during soil removal and would then be replaced once the shallow impacted soil had been removed. Gallardo & Associates, Inc. submitted a report entitled Deep Well Groundwater Monitoring Well Installation Report for 3880 Gravenstein Highway in Sebastopol, California*, dated September 22, 2005.

1.3 Site Conceptual Model

1.3.1 Soil Model

The site soils consist of brown to greyish brown sands to an approximate depth of between three and

seven feet bgs. The underlying layer consists of a yellow-brown clayey sand containing small seams of sandy clay, however, the seams are consistent and appeared to be connected to a three-foot thick bed of sandy clay detected beneath well MW-7. The bottom most bed consists of a yellow-brown clayey sand to brown sand to a depth of approximately 21 feet bgs. No petroleum odor or discoloration were detected in the encountered soil profile, however, trace amounts of 1,2-Dichloroethane (DCA) were detected in the groundwater sample collected from well MW-6 located downgradient of the former UST cavity. A petroleum odor was detected from between approximately four to eight feet bgs in borings GA-1 through GA-4 located towards the front of the site property. *The highest impacted soil concentrations detected at the site were, (TPH-g @ 13,000 ppm and benzene @ 27 ppm) located between a depth of approximately 6 to 6 ½ feet bgs. Based on the recent deep well site evaluation, it would appear that both the vertical and lateral extent of the impacted soil has been defined and now appears to be located between wells MW-2 and MW-3, up to the end of the northeast corner of the building. If this area is excavated it is likely that the soil plume can be remediated quickly.*

1.3.2 Groundwater Model

Depending on the season, shallow groundwater beneath the site is generally encountered at a depth of between approximately 1 ½ and eight feet bgs. The site contains nine groundwater monitoring wells, one drilled to approximately 14 ½, four drilled to a depth of approximately 20 feet bgs, three to 25 feet bgs, and one to 35 feet bgs. Based on the water measurements collected over the years from all of the existing groundwater monitoring wells located at the site property and boring cross sections, groundwater beneath the site appears to be in a confined to semi-confined state. A perched water zone was also detected at a depth of approximately 1 ½ feet bgs and ending at a depth of between 3 ½ feet to five feet bgs. The perched water zone was also detected during the decommissioning of well MW-3 and had a strong gasoline odor when encountered. The perched water zone appears to have been impacted by petroleum fuel hydrocarbons and needs to be defined and sampled. In addition, no deep water borings (> 50 feet bgs) have been advanced on the site. *The groundwater has been impacted by concentrations of TPH-g, BTEX, and the Fuel Oxygenate TBA. The highest concentrations detected at the site were TPH-g @ 8,800 ppb, Benzene @ 260 ppb, and TBA @ 370 ppb. In addition, the Chlorinated Solvent 1,2 DCA was detected at the site (14 ppb). The present concentrations are as follows: TPH-g @ 640 ppb, benzene @ 2.7 ppb, and TBA @ 85 ppb, 1,2 DCA @ 12 ppb. The horizontal extent of the impacted groundwater has been defined along with the perched water table, which flows through the site from an upgradient direction located northeast of the site and flows through the building in a southern direction. However, it appears to be seasonal and does not appear to pose a threat to the area during the summer and fall seasons. However, during the winter and spring, it appears to flow through the impacted shallow soil area located at the front of the building. The perched zone ranges in thickness from approximately one to two feet. The vertical extent of the groundwater plume may not have been detected during the most recent investigation and appears to extend beyond a depth of 51 feet bgs. The impact extends into the bedrock which consists of a highly weathered and fractured Sandstone. However, the lateral extent of the lower water zone impact appears to be confined to the area around well DW-1. The lower water zone appears to be under a semi-confined state, meaning that the water-bearing formation may not be completely confined and may be in contact with the upper water table zone. Further evaluation of this premise must be conducted in order to prove this evaluation.*

2.0 GROUNDWATER SAMPLING

2.1 Groundwater Elevation Measurements

On **November 11, 2005**, groundwater elevations were measured for monitoring wells DW-1 through DW-3 prior to purging. The depth to groundwater was measured using a Slope Indicator electronic groundwater measuring device equipped with a 100-foot tape containing 100th-of-an-foot increments. The data was recorded on Sample Event Data Sheets and is presented in **Appendix A**.

The general direction of groundwater flow beneath the site was calculated from the **November 11, 2005** measurements. Groundwater flow beneath the site revealed a eastern flow, with a hydraulic gradient averaged approximately 0.03 ft/ft. The groundwater elevation data is shown on **Figure 3**.

Table 1 contains monitoring well elevations, depths to static water, and groundwater surface elevations.

TABLE 1

Cumulative Deep Groundwater Well Elevation Data

**For
3880 Gravenstein Highway in Sebastopol, California**

WELL	DATE MEASURED	ELEVATION OF TOP OF CASING (Feet)	DEPTH TO WATER (Feet)	ELEVATION OF STATIC WATER LEVEL (Feet)
DW-1	08/18/05 11/11/05	98.23	6.15 6.28	92.08 91.95
DW-2	08/18/05 11/11/05	96.51	4.32 4.45	92.19 92.06
DW-3	08/18/05 11/11/05	97.21	5.04 6.28	92.17 90.93

***All three wells were surveyed by Virgil Chavez Land Surveying, a California licenced Land Surveyor on July 12, 2005.**

2.2 Monitoring Well Sampling

The three deep groundwater monitoring wells were sampled on **November 11, 2005**. A total of three well volumes were purged from each well so that a full recharge could occur prior to sampling. During purging, temperature, conductivity, and pH readings were taken until stabilization of these three groundwater monitoring parameters was accomplished (three consecutive readings within ten percent of each other). After each well recharged to approximately 80 % or more of its original water column height, groundwater samples were then collected for laboratory analysis.

Groundwater samples were collected by placing a disposable bailer down the center of each well casing to allow for an in-situ water sample collection. Water was captured in each bailer and was placed in 40 ml VOA vials containing HCL as a preservative. The samples were prepared according to EPA SW 849 and capped with Teflon-lined septa caps. One-liter Amber bottles were used to store diesel samples. A new bailer was used at each monitoring well location. The purged water was placed in a 55-gallon D.O.T. approved drum and stored on-site for subsequent disposal by the owner. The sampling event data sheets are presented in **Appendix A**.

3.0 ANALYTICAL RESULTS

3.1 Monitoring Well Sampling Analytical Results

The cumulative analytical groundwater data is summarized in **Table 2**. The laboratory analytical data sheets and chain-of-custody records for the **November 11, 2005** sampling are included as **Appendix A**. The laboratory reporting limits for Volatile Halocarbons analysis are 0.5 ug/L (ppb), MTBE analysis are 5.0 ug/L (ppb), for TPH-d analysis 50 ug/L (ppb), for TPH-g analysis 50 ug/L (ppb) and for BTEX analysis 0.5 ug/L (ppb).

The groundwater laboratory results for DW-1 through DW-3 are summarized in **Table 2**.

TABLE 2
Groundwater sampling results for
3880 Gravenstein Highway in Sebastopol, California

BORING NUMBER	SAMPLE DATE	1,2-EDB ug/L	1,2 DCA ug/L	THP-d ug/L	TPH-g ug/L	Benzene ug/L	Toluene ug/L	Ethyl Benzene ug/L	Xylenes ug/L
DW-1	06/23/05 08/18/05 11/11/05	ND < 1.0 ND < 0.5 ND < 0.5	ND < 1.0 ND < 0.5 ND < 0.5	NT NT NT	5,700 2,400 2,000	110 42 24	340 70 18	160 38 2.9	790 310 200
DW-2	06/23/05 08/18/05 11/11/05	< 0.5 ND < 0.5 ND < 0.5	< 0.5 ND < 0.5 ND < 0.5	NT NT NT	110 < 50 < 50	2.2 < 0.5 < 0.5	8.0 < 0.5 < 0.5	2.8 < 0.5 < 0.5	17 < 0.5 < 0.5
DW-3	06/23/05 08/18/05 11/11/05	< 0.5 ND < 0.5 ND < 0.5	< 0.5 ND < 0.5 ND < 0.5	NT NT NT	< 50 < 50 < 50	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5	< 0.5 < 0.5 < 0.5
*California Department of Health Services primary maximum contamination level for drinking water.		0.5		None Listed	None Listed	1.0	150	700	1,750

Drinking Water Standards and Health Advisories Table, EPA August, 1995. California MCL's. NT = Not Tested

CONCLUSIONS

Groundwater flow beneath the site revealed a eastern flow, with a hydraulic gradient averaged approximately 0.03 ft/ft. The analytical results again revealed a decline in the concentrations of TPH-g and benzene in well DW-1. In addition, no concentrations of 1,2 EDB or 1,2 DCA were detected. An additional deep well may be needed east or northeast of DW-1 to determine the lateral definition of the deep water plume. However, an additional round of monitoring will be needed to determine the groundwater flow direction of the deep water wells.

5.0 RECOMMENDATIONS

Based upon the above observations and conclusion, and to approach eventual closure at this site, *Gallardo & Associates, Inc.* recommends the following work:

- Continuation of additional episodes of groundwater monitoring of the three deep monitoring wells to evaluate trends in gasoline hydrocarbon concentrations and direction of groundwater flow beneath the site.
- Discontinuation of 1,2 EDB analysis on deep wells.

6.0 SCHEDULE OF ACTIVITIES FOR NEXT QUARTER

The next quarterly sampling event is scheduled to in February 2006. After groundwater levels are measured, samples will be collected from each well and analyzed for 1,2 EDB, 1,2 DCA, TPH-g, and BTEX. The First quarter 2006 report will present *Gallardo & Associates, Inc.* 3rd episode of deep water groundwater sampling results.

7.0 REPORT DISTRIBUTION

Gallardo & Associates, Inc. recommends that this report be distributed to the following agencies:

- **Sonoma County Environmental Health Division**
475 Aviation Blvd., Suite 220
Santa Rosa, CA 95403
Attention: **Darcy Baring**

8.0 LIMITATIONS

This report has been prepared in accordance with generally accepted environmental, geological and engineering practices. *Gallardo & Associates, Inc.* makes no warranty, either expressed or implied, as to the professional advice presented herein. The analysis, conclusions and recommendations contained in this groundwater monitoring report are based upon site conditions as they existed at the time of the sampling and they are subject to change. The conclusions presented in this report are professional opinions based solely upon past and present laboratory analytical results, visual observations of the site and vicinity, and interpretation of available information as described in this report. Any use or reuse of this document or its findings, conclusions or recommendations presented herein is at the sole risk of said user.

9.0 REFERENCES

Soil and Groundwater Investigation 3880 Gravenstein Highway South Sebastopol, California by PES Environmental, dated August 25, 1993.

1998 First Quarterly Groundwater Monitoring Report, by *Gallardo & Associates*, dated January 30, 1998.

Workplan for a Limited Soil and Groundwater Investigation, by *Gallardo & Associates*, dated April 15, 1998.

Monitoring Well Installation Report at 3880 Gravenstein Highway in Sebastopol, California, by *Gallardo & Associates, Inc.* dated January 19, 1999.

1999 Second Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated July 30, 1999.

2000 Second Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated October 20, 2000.

2000 Third Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated October 28, 2000.

2000 Fourth Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated March 20, 2001.

2001 First Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated May 28, 2001.

2001 Second Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated June 20, 2001.

Sensitive Receptor Survey for the Minnie Corbit Site Located At: 3880 Gravenstein Highway, Sebastopol, California. by *Gallardo & Associates, Inc.*, dated September 1, 2001.

2001 Third Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated September 17, 2001.

2001 Fourth Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated November 29, 2001.

2002 First Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated April 30, 2002.

2002 Second Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated June 20, 2002.

2002 Third Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated September 15, 2002

2002 Fourth Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated January 30, 2003.

2003 First Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated March 5, 2003.

2003 Second Quarterly Groundwater Monitoring Report, by *Gallardo & Associates, Inc.*, dated September 5, 2003.

2003 Third Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated September 5, 2003.

2003 Fourth Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated January 25, 2004.

2004 First Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated February 15, 2004.

2004 Second Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated June 19, 2004.

2004 Third Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated September 20, 2004.

2004 Fourth Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated November 6, 2004.

2005 First Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated May 15, 2005.

2005 Second Quarterly Groundwater Monitoring Report by *Gallardo & Associates, Inc.*, dated September 17, 2005.

9.1 Geological References

Geology For Planning In Sonoma County, Special Report 120, California Division of Mines and Geology, 1980.

Tectonic Setting of Late Miocene, Pliocene, and Pleistocene Rocks in Part of the Coast Ranges North of San Francisco Bay, California, By Kenneth F. Fox Jr., 1983. Geological Survey Professional Paper 1239.

Bulletin No. 118 California's Ground water, State of California. Department of Water Resources, September 1975.

Bulletin 118-80, Ground Water Basins in California, State of California. Department of Water Resources, January 1980.

Geologic Map of the Santa Rosa Quadrangle. By D.L. Wagner, and E. J. Bortugno, Map No. 2A, 1982.

APPENDIX A

PURGE DATA (November 11, 2005)

GALLARDO & ASSOCIATES, INC.**ENVIRONMENTAL AND GEOLOGICAL SERVICES**

P. O. Box 430, Santa Rosa, CA

(707) 537-2292

(707) 537-2292 FAX

PROJECT NAME:

HIGHGRADE TOWING/DISMANTLING SITE

PROJECT No.:

016A.98

SAMPLER:

Gallardo

DATE:

11/11/05**WELL/HYDROLOGIC STATISTICS**

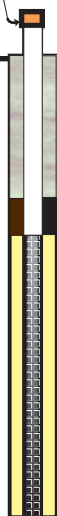
Monitoring Well No.

DW-1TOC ELEVATION **98.23**

Monitoring well Diameter

2"

Ground surface

SWL **6.28**

Total Measured Depth

45

Total Design Depth

45

Action

Time

Pump Rate

IWL
(low yield)

Stop

Sampled

(Final IWL)

Purge Calculator

$$0.163 \text{ gal/ft.} \times 38.72 \text{ ft} = 6.31 \text{ gals.} \times 3 = 18.93 \text{ gals.}$$
SWL to BOP or
packer to BOPone
volumepurge volume-
3 casings

Actual Gallons Purged:

19

Actual Volumes Purged:

3.01

Well Yield:

Good GPM**Equipment Used:**

Slope Indicator

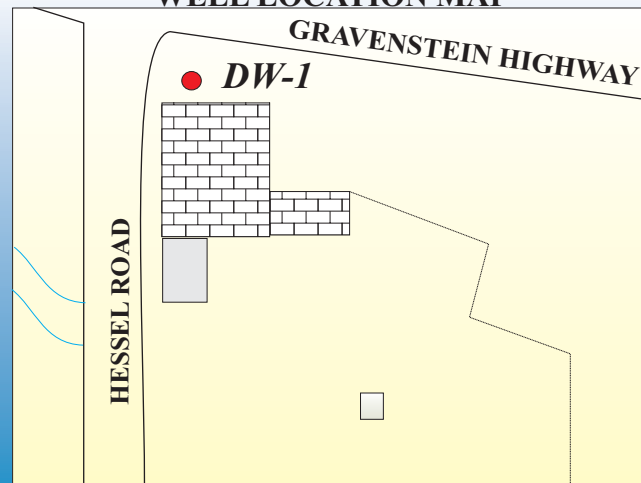
Hydac Kit

Tool Box

3/8-inch diameter tubing (30) Feet)

One Pair of Nitrile Gloves

3/4-inch diameter disposable bailer

Additional Comments:**WELL LOCATION MAP**

Gallons Purged	TEMP C/ F (Circle One)	EC (us/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 18.0	64.0	525	6.99			
2. 18.5	63.9	520	6.99			
3. 19.0	63.3	517	6.99			
4.						

VOLUME OF WATER IN CASING OR BOREHOLE

1.0 = 0.041	4.0 = 0.653	7.0 = 2.00
1.5 = 0.092	4.5 = 0.826	8.0 = 2.611
2.0 = 0.163	5.0 = 1.020	9.0 = 3.305
2.5 = 0.255	6.0 = 1.469	

**GROUNDWATER MONITORING
WELL SAMPLING EVENT SHEET****DW-1**

GALLARDO & ASSOCIATES, INC.**ENVIRONMENTAL AND GEOLOGICAL SERVICES**

P. O. Box 430, Santa Rosa, CA

(707) 537-2292

(707) 537-2292 FAX

PROJECT NAME:

HIGHGRADE TOWING/DISMANTLING SITE

PROJECT No.:

016A.98

SAMPLER:

Gallardo

DATE:

11/11/05**WELL/HYDROLOGIC STATISTICS**

Monitoring Well No.

DW-2TOC ELEVATION **96.51**

Monitoring well Diameter

2"

Ground surface

SWL **4.45**

Total Measured Depth

45

Total Design Depth

45

Action

Time

Pump Rate

IWL
(low yield)

Stop

Sampled

(Final IWL)

Purge Calculator

$$0.163 \text{ gal/ft.} \times 40.55 \text{ ft} = 6.61 \text{ gals.} \times 3 = 19.83 \text{ gals.}$$
SWL to BOP or
packer to BOPone
volumepurge volume-
3 casings

Actual Gallons Purged:

20

Actual Volumes Purged:

3.03

Well Yield:

Good GPM**Equipment Used:**

Slope Indicator

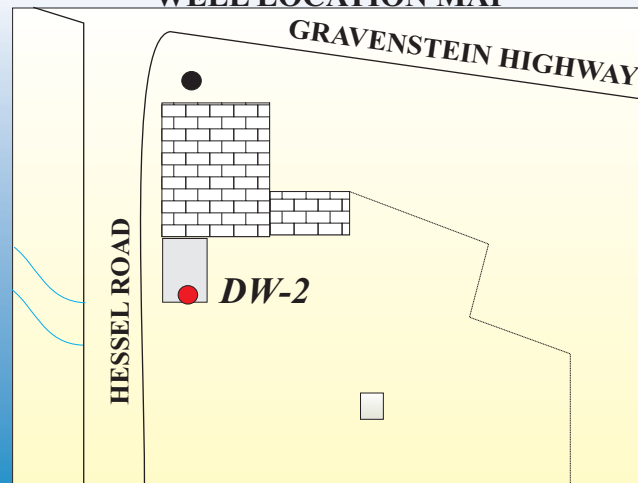
Hydac Kit

Tool Box

3/8-inch diameter tubing (30) Feet)

One Pair of Nitrile Gloves

3/4-inch diameter disposable bailer

Additional Comments:**WELL LOCATION MAP**

Gallons Purged	TEMP C/ F (Circle One)	EC (us/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 19.0	62.6	535	7.01			
2. 19.5	62.6	457	7.00			
3. 20.0	62.2	439	7.00			
4.						

VOLUME OF WATER IN CASING OR BOREHOLE

1.0 = 0.041	4.0 = 0.653	7.0 = 2.00
1.5 = 0.092	4.5 = 0.826	8.0 = 2.611
2.0 = 0.163	5.0 = 1.020	9.0 = 3.305
2.5 = 0.255	6.0 = 1.469	

**GROUNDWATER MONITORING
WELL SAMPLING EVENT SHEET****DW-2**

GALLARDO & ASSOCIATES, INC.**ENVIRONMENTAL AND GEOLOGICAL SERVICES**

P. O. Box 430, Santa Rosa, CA

(707) 537-2292

(707) 537-2292 FAX

PROJECT NAME:

HIGHGRADE TOWING/DISMANTLING SITE

PROJECT No.:

016A.98

SAMPLER:

Gallardo

DATE:

11/11/05**WELL/HYDROLOGIC STATISTICS**

Monitoring Well No.

DW-3TOC ELEVATION **97.21**

Monitoring well Diameter

2"

Ground surface

SWL **5.09**

Total Measured Depth

45

Total Design Depth

45

Action

Time

Pump Rate

IWL
(low yield)

Stop

Sampled

(Final IWL)

Purge Calculator

$$0.163 \text{ gal./ft.} \times 39.91 \text{ ft} = 6.51 \text{ gals.} \times 3 = 19.52 \text{ gals.}$$
SWL to BOP or
packer to BOPone
volumepurge volume-
3 casings

Actual Gallons Purged:

20

Actual Volumes Purged:

3.07

Well Yield:

Good GPM**Equipment Used:**

Slope Indicator

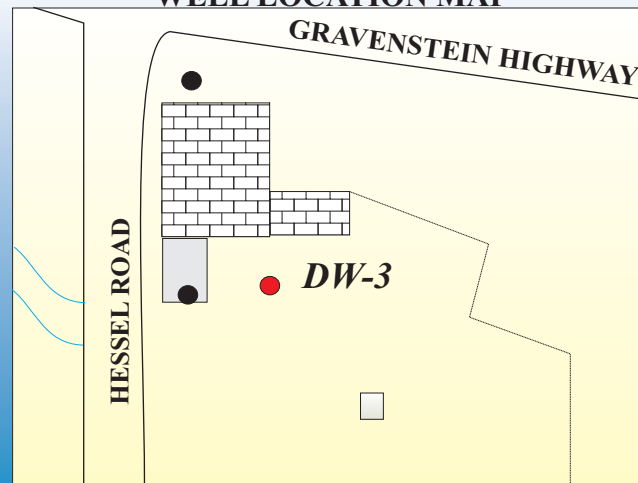
Hydac Kit

Tool Box

3/8-inch diameter tubing (30) Feet)

One Pair of Nitrile Gloves

3/4-inch diameter disposable bailer

Additional Comments:**WELL LOCATION MAP**

Gallons Purged	TEMP C/ F (Circle One)	EC (us/cm)	PH	TURBIDITY (NTU)	HEAD (FT)	TIME
1. 19.0	64.6	542	7.06			
2. 19.5	63.0	520	7.02			
3. 20.0	62.9	516	7.01			
4.						

VOLUME OF WATER IN CASING OR BOREHOLE

1.0 = 0.041	4.0 = 0.653	7.0 = 2.00
1.5 = 0.092	4.5 = 0.826	8.0 = 2.611
2.0 = 0.163	5.0 = 1.020	9.0 = 3.305
2.5 = 0.255	6.0 = 1.469	

**GROUNDWATER MONITORING
WELL SAMPLING EVENT SHEET****DW-3**

APPENDIX B

ANALYTICAL DATA SHEETS
AND
CHAIN-OF-CUSTODY RECORDS
FOR MONITORING WELL SAMPLING
(November 11, 2005)



110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
Website: www.mcccampbell.com E-mail: main@mcccampbell.com

+The following descriptions of the TPH chromatogram are cursory in nature and McCampbell Analytical is not responsible for their interpretation: a) unmodified or weakly modified gasoline is significant; b) heavier gasoline range compounds are significant(aged gasoline?); c) lighter gasoline range compounds (the most mobile fraction) are significant; d) gasoline range compounds having broad chromatographic peaks are significant; biologically altered gasoline?; e) TPH pattern that does not appear to be derived from gasoline (stoddard solvent / mineral spirit?); f) one to a few isolated non-target peaks present; g) strongly aged gasoline or diesel range compounds are significant; h) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) reporting limit raised due to high MTBE content; k) TPH pattern that does not appear to be derived from gasoline (aviation gas). m) no recognizable pattern; n) TPH(g) range non-target isolated peaks subtracted out of the TPH(g) concentration at the client's request.

DHS Certification No. 1644

Angela Rydelius, Lab Manager

McCampbell Analytical, Inc.

110 2nd Avenue South, #D7, Pacheco, CA 94553-5560
Telephone : 925-798-1620 Fax : 925-798-1622
Website: www.mccampbell.com E-mail: main@mccampbell.com

Gallardo & Associates
P.O. Box 430
Santa Rosa, CA 95402

Client Project ID: #016A.98; Corbit
Site

Date Sampled: 11/11/05

Date Received: 11/14/05

Client Contact: Rafael Gallardo

Date Extracted: 11/15/05

Client P.O.:

Date Analyzed: 11/15/05

Ethylene Dibromide (1,2-Dibromoethane) and 1,2-Dichloroethane (1,2-DCA)*

Extraction method: SW5030B

Analytical methods: SW8260B

Work Order: 0511275

[illegible]

Reporting Limit for DF =1; ND means not detected at or above the reporting limit	W	0.5	0.5	µg/L
	S	NA	NA	mg/Kg

Water and vapor samples are reported in µg/L, soil/sludge/solid samples in mg/kg, product/oil/non-aqueous liquid samples and all TCLP & SPLP extracts are reported in mg/L, wipe samples in µg/wipe.

ND means not detected above the reporting limit; N/A means analyte not applicable to this analysis.

[#] surrogate diluted out of range or surrogate coelutes with another peak.

l) lighter than water immiscible sheen/product is present; i) liquid sample that contains greater than ~1 vol. % sediment; j) sample diluted due to high organic content/matrix interference; k) reporting limit near, but not identical to our standard reporting limit due to variable Encore sample weight; m) reporting limit raised due to insufficient sample amount; n) results are reported on a dry weight basis; p) see attached narrative.

DHS Certification No. 1644

Angela Rydelius, Lab Manager